

## AMENDMENTS TO THE CLAIMS

**Please amend the claims according to the following claim listing. The claims are marked to show changes.**

1. (Currently Amended) An antibody which recognizes the amino acid sequence comprising RSATEEEPPNDD **(SEQ ID NO: 1)** of the  $\alpha$ -subunit of (Na<sup>+</sup> + K<sup>+</sup>)-ATPase enzyme, or an isoform of the amino acid sequence.
2. (Currently Amended) The antibody of claim 1, wherein binding of the antibody to the amino acid sequence, RSATEEEPPNDD **(SEQ ID NO: 1)**, of the  $\alpha$ -subunit of (Na<sup>+</sup> + K<sup>+</sup>)-ATPase increases myocyte intracellular diastolic and systolic calcium.
3. (Currently Amended) The antibody of claim 1, wherein binding of the antibody to the amino acid sequence, RSATEEEPPNDD **(SEQ ID NO: 1)**, of the  $\alpha$ -subunit of (Na<sup>+</sup> + K<sup>+</sup>)-ATPase exerts a positive inotropic effect in cardiac myocytes.
4. (Original) The antibody of claim 1, wherein the antibody is a polyclonal antibody.
5. (Original) The antibody of claim 1, wherein the antibody is a monoclonal antibody.
6. (Original) The antibody of claim 1, wherein the antibody is a humanized antibody.
7. (Original) The antibody of claim 1, wherein the antibody is administered to a patient in an effective therapeutic amount to treat the patient suffering from or susceptible to heart disease and/or muscle contractile disorders.

8. (Currently Amended) An antibody which recognizes the amino acid sequence comprising DVEDSYGQQWTYEQR **(SEQ ID NO: 2)** of the  $\alpha$ -subunit of (Na<sup>+</sup> + K<sup>+</sup>)-ATPase enzyme, of which recognizes an isoform of the amino acid sequence.
9. (Currently Amended) The antibody of claim 8, wherein binding of the antibody to the amino acid sequence, DVEDSYGQQWTYEQR **(SEQ ID NO: 2)**, of the  $\alpha$ -subunit of (Na<sup>+</sup> + K<sup>+</sup>)-ATPase increases myocyte intracellular diastolic and systolic calcium.
10. (Currently Amended) The antibody of claim 8, wherein binding of the antibody to the amino acid sequence, DVEDSYGQQWTYEQR **(SEQ ID NO: 2)**, of the  $\alpha$ -subunit of (Na<sup>+</sup> + K<sup>+</sup>)-ATPase exerts a positive inotropic effect in cardiac myocytes.
11. (Original) The antibody of claim 8, wherein the antibody is a polyclonal antibody.
12. (Original) The antibody of claim 8, wherein the antibody is a monoclonal antibody.
13. (Original) The antibody of claim 8, wherein the antibody is a humanized antibody.
14. (Original) The antibody of claim 8, wherein the antibody is administered to a patient in an effective therapeutic amount to treat the patient suffering from or susceptible to heart disease and/or muscle contractile disorders.
15. (Currently Amended) A purified peptide comprising the amino acid sequence RSATEEEPPNDD **(SEQ ID NO: 1)** or derivatives or isoform thereof.
16. (Original) The peptide of claim 15, wherein the peptides are administered individually or in combination in a pharmaceutically acceptable carrier to a patient.

17. (Currently Amended) A nucleic acid vector encoding an amino acid sequence comprising RSATEEEPPNDD (SEQ ID NO: 1) or isoform thereof.

18. (Original) The vector of claim 17, wherein the vector comprises tissue specific promoters.

19. (Original) The vector of claim 17, wherein the tissue specific promoters are cardiac tissue specific.

20. (Currently Amended) The vector of claim 17, wherein the in vivo generated antibodies bind to the amino acid sequence, RSATEEEPPNDD (SEQ ID NO: 1), of the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)$ -ATPase.

21. (Currently Amended) The vector of claim 18, wherein binding of the in vivo generated antibodies to the amino acid sequence, RSATEEEPPNDD (SEQ ID NO: 1), of the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)$ -ATPase increases myocyte intracellular diastolic and systolic calcium.

22. (Currently Amended) The vector of claim 18, wherein binding of the in vivo generated antibodies to the amino acid sequence, RSATEEEPPNDD (SEQ ID NO: 1), of the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)$ -ATPase exerts a positive inotropic effect in cardiac myocytes.

23. (Original) The vector of claim 18, wherein the vector is administered to a patient in an effective therapeutic amount to treat the patient suffering from or susceptible to heart disease and/or muscle contractile disorders.

24. (Currently Amended) A purified peptide comprising the amino acid sequence DVEDSYGQQWTYEQR (SEQ ID NO: 2) or derivative or isoform thereof.

25. (Original) The peptide of claim 24, wherein the peptides are administered individually or in combination in a pharmaceutically acceptable carrier to a patient.

26. (Currently Amended) A nucleic acid vector encoding an amino acid sequence comprising DVEDSYGQQWTYEQR **(SEQ ID NO: 2)**.

27. (Original) The vector of claim 26, wherein the vector comprises tissue specific promoters.

28. (Original) The vector of claim 26, wherein the tissue specific promoters are cardiac tissue specific.

29. (Currently Amended) The vector of claim 26, wherein the in vivo generated antibodies bind to the amino acid sequence, DVEDSYGQQWTYEQR **(SEQ ID NO: 2)**, of the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$ .

30. (Currently Amended) The vector of claim 27, wherein binding of the in vivo generated antibodies to the amino acid sequence, DVEDSYGQQWTYEQR **(SEQ ID NO: 2)**, of the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$  increases myocyte intracellular diastolic and systolic calcium.

31. (Currently Amended) The vector of claim 27, wherein binding of the in vivo generated antibodies to the amino acid sequence, DVEDSYGQQWTYEQR **(SEQ ID NO: 2)**, of the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$  exerts a positive inotropic effect in cardiac myocytes.

32. (Original) The vector of claim 27, wherein the vector is administered to a patient in an effective therapeutic amount to treat the patient suffering from or susceptible to heart disease and/or muscle contractile disorders.

33. (Original) A method of generating antibodies, wherein binding of the antibodies to an epitope of the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$  exerts a positive inotropic effect in cardiac myocytes, comprising: generating amino acid sequences corresponding to overlapping peptide fragments of the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$  and variants thereof; and, obtaining antibodies specific for each peptide fragment by standard methods; and, determining the effects of the antibodies on intracellular diastolic and systolic calcium levels and cell shortenings as compared to controls.

34. (Original) The method of claim 33, wherein binding of the antibodies to the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$  exerts a positive inotropic effect in cardiac myocytes.

35. (Original) The method of claim 34, wherein binding of the antibodies to the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$  increases myocyte intracellular diastolic and systolic calcium.

36. (Original) The method of claim 35, wherein binding of the antibodies to the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$  increases myocytes contractions as compared to controls.

37. (Original) The method of claim 34, wherein the antibodies generated are polyclonal antibodies.

38. (Original) The method of claim 34, wherein the antibodies generated are monoclonal antibodies.

39. (Original) The method of claim 34, wherein the antibody is administered to a patient in an effective therapeutic amount to treat the patient suffering from or susceptible to heart disease and/or muscle contractile disorders.

Serial No.: 10/607,583

Filing Date: June 25, 2003

Title: Inotropic Antibodies and Therapeutic Uses Thereof

40. (Original) The method of claim 34, wherein the antibody is administered to a patient in a therapeutically effective amount to block other molecules from binding to drug-interaction sites of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$ , wherein the patient is suffering from or susceptible to arrhythmias, tachyarrhythmias and the like.

41. (Original) The antibodies of claim 40, wherein the antibodies eliminate negative inotropic agents.

42. (Original) A method for diagnosing heart failure and/or contractile disorders comprising: isolating heart tissue; and; allowing the binding of inotropic antibodies to epitopes of isolated heart tissue; and, measuring intracellular diastolic and systolic calcium and cell shortenings.

43. (Original) The method of claim 42, wherein inotropic antibodies binding to epitopes of the  $\alpha$ -subunit of  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$  from cells of patients suffering from or susceptible to heart failure and/or contractile disorders will have a lower inotropic effect as compared to healthy individuals.

44. (Currently Amended) A method for targeting and blocking the RSATEEEPPNDD **(SEQ ID NO: 1)** site of  $\alpha$ -subunit of the  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$ , comprising: contacting a myocyte with a desired molecule; and, measuring the intracellular diastolic and systolic  $\text{Ca}^{2+}$ ; and, measuring cell shortening and heart function; whereby, identifying molecules useful for therapy of patients suffering from or susceptible to heart disease and other contractile disorders.

45. (Original) The method of claim 44, wherein the desired molecules are administered to patients suffering from and/or susceptible to heart disease and other contractile disorders, an effective therapeutic amount of desired molecules.

46. (Currently Amended) A method for targeting and blocking the DVEDSYGQQWTYEQR

Serial No.: 10/607,583

Filing Date: June 25, 2003

Title: Inotropic Antibodies and Therapeutic Uses Thereof

**(SEQ ID NO: 2)** site of  $\alpha$ -subunit of the  $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$ , comprising: contacting a myocyte with a desired molecule; and, measuring the intracellular diastolic and systolic  $\text{Ca}^{2+}$ ; and, measuring cell shortening and heart function; whereby, identifying molecules useful for therapy of patients suffering from or susceptible to heart disease and other contractile disorders.

47. (Original) The method of claim 46, wherein the desired molecules are administered to patients suffering from and/or susceptible to heart disease and other contractile disorders, an effective therapeutic amount of desired molecules.